# DIO4-cPCI-CC

## DSP-Based Input/Output Module

I/O & COMMUNICATIONS

## Features

**3U cPCI Conduction Cooled**

**PMC Mezzanine**

- Supports a conduction cooled PMC module
- 32-bit 33 MHz

**Inputs/Outputs**

- 24 Discrete Ground/Open Inputs 0 to 28 V
- 16 TTL Level Discrete Inputs
- 16 TTL Level Discrete Outputs
- 16 HLD Loopback Inputs
- 16 Discrete Ground/Open Outputs

**I/O Controller**

- Altera 1K series FPGA with embedded IP PCI core for main processor communications

**Voltage Monitor**

- 8-Channel, 10-Bit ADC for monitoring power supply secondary voltages

**cPCI Interface**

- Conforms to PICMG 2.0 R2.1 for a Target board

**Memory Area**

- 128 k Words of SRAM and 256 k Words of Flash memory

**Versatile Microprocessor**

- Texas Instruments TMS5402
- Microcode-based design for flexible support of unique customer protocols

**Software Programming**

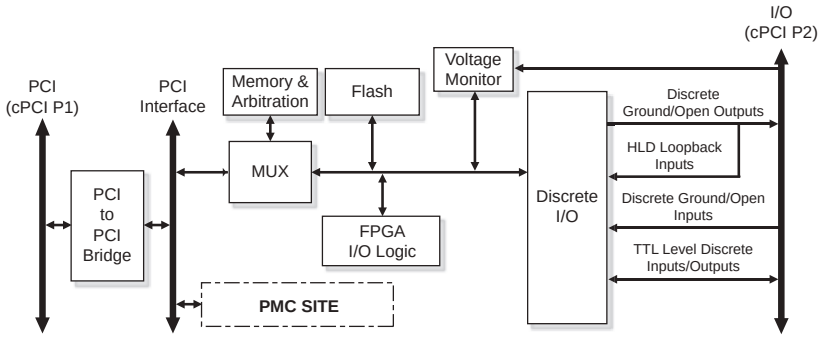
- DSP and FPGA configuration data stored in Flash memory

**DIO4-cPCI-CC** provides a highly versatile interface between the cPCI bus and DSP-Based inputs and outputs. Typical signal handling capabilities include Discrete Ground/Open outputs, High Level Discrete (HLD) Loopback inputs, and TTL level inputs and outputs. For added versatility, the card also includes a PCI Mezzanine Card Interface (PMC site). The ability to handle a wide variety of signals, perform on-the-fly signal processing, together with its conduction cooled temperature range makes the DIO4-cPCI-CC ideal for use in mission computers and other applications with harsh environmental demands.

DSP program code and FPGA configuration data can be downloaded and stored in FLASH memory via the host processor of the cPCI bus, allowing the card to combine the functionality of several individual speciality cards, saving precious backplane slots and the additional power, weight, and cooling requirements associated with those extra slots.

Signals move between the P1 connector on the PCI data bus, and external devices on the P2 connector, via a series of interfaces including a PCI-to-PCI Bridge, PCI interface, MUX, and a DSP core.

***Simplified Block Diagram of DIO4-cPCI-CC Card***




The module receives input power from the power supply via the cPCI bus. A secondary voltage of +5 V is standard, and optional voltages of +3.3 V, +12 V, and -12 V supplied either from the backplane or generated onboard, are available. Discrete output interfaces include discrete ground/open outputs and general purpose TTL digital outputs. The DIO4 also provides HLD loopback inputs and includes an ADC for BIT monitoring of power supply secondary voltages.

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**DIO I/O and Control Functions - J1 Data Bus**
- 32 Bit cPCI

**DIO I/O and Control Functions - J2 I/O**
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**Input Power**
- 5 VDCstandard
- 3.3 VDC, +12 VDC, and –12 VDC optional on backplane or onboard

**I/O Connectors**
- Per IEC 61076-4-101

**Power Requirements**
- +5 Volts ± 5% at 0.2 A maximum
- +3.3 Volts ± 5% at 0.4 A maximum

**Temperature**
- Operating: -40° to 85° C
- Storage: -55° to +95° C

**Humidity**
- 5% to 95%, non-condensing

**Weight**
- Approximately 0.159 kg (0.35 lb.)

**Dimensions**
- 3U Euroboard, 100.0 mm x 160.0 mm

**Vibration**
- Random - 0.05 $g^2$/Hz, 20-2,000 Hz for 1 hour on each axis
- Endurance - 0.06 $g^2$/Hz for 3 hours on each axis

**MTBF**
- >70,000 hours

**Conformal Coating**

**Quality Assurance**
- Designed and tested to ISO-9001 certified procedures

**Built-in Test Capability**
- BIT monitoring for failure detection

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- >70,000 hours

**Conformal Coating**

**Quality Assurance**
- Designed and tested to ISO-9001 certified procedures

**Built-in Test Capability**
- BIT monitoring for failure detection

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# DIO4-cPCI-CC

## Configurations

| Model Number | Configuration |
|---|---|
| DIO4-cPCI-CCAR0 | cPCI to DIO, Conduction Cooled |

## Specifications

**Form Factor**
- 3U cPCI

**Designed in Accordance with IEEE 1101.2 and VITA 30.1**

**Electrical Interfaces**
- 24 Discrete Ground/Open Inputs 0 to 28 V
- 16 TTL Level Discrete Inputs
- 16 HLD Loopback Inputs
- 16 Discrete Ground/Open Outputs
- 16 TTL Level Discrete Outputs
- 1 cPCI interface - conforms to requirements of PICMG 2.0 R2.1 for Target board

**DIO I/O and Control Functions - J1 Data Bus**
- 32 Bit cPCI

**DIO I/O and Control Functions - J2 I/O**
- Input and output flexibility provided via software programmability and configurable biasing circuitry

**Input Power**
- 5 VDCstandard
- 3.3 VDC, +12 VDC, and –12 VDC optional on backplane or onboard

**I/O Connectors**
- Per IEC 61076-4-101

**Power Requirements**
- +5 Volts ± 5% at 0.2 A maximum
- +3.3 Volts ± 5% at 0.4 A maximum

**Temperature**
- Operating: -40° to 85° C
- Storage: -55° to +95° C

**Humidity**
- 5% to 95%, non-condensing

**Weight**
- Approximately 0.159 kg (0.35 lb.)

**Dimensions**
- 3U Euroboard, 100.0 mm x 160.0 mm

**Vibration**
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# DIO4-cPCI-CC

## DSP-Based Input/Output Module

I/O & COMMUNICATIONS

## Features

**3U cPCI Conduction Cooled**

**PMC Mezzanine**

- Supports a conduction cooled PMC module
- 32-bit 33 MHz

**Inputs/Outputs**

- 24 Discrete Ground/Open Inputs 0 to 28 V
- 16 TTL Level Discrete Inputs
- 16 TTL Level Discrete Outputs
- 16 HLD Loopback Inputs
- 16 Discrete Ground/Open Outputs

**I/O Controller**

- Altera 1K series FPGA with embedded IP PCI core for main processor communications

**Voltage Monitor**

- 8-Channel, 10-Bit ADC for monitoring power supply secondary voltages

**cPCI Interface**

- Conforms to PICMG 2.0 R2.1 for a Target board

**Memory Area**

- 128 k Words of SRAM and 256 k Words of Flash memory

**Versatile Microprocessor**

- Texas Instruments TMS5402
- Microcode-based design for flexible support of unique customer protocols

**Software Programming**

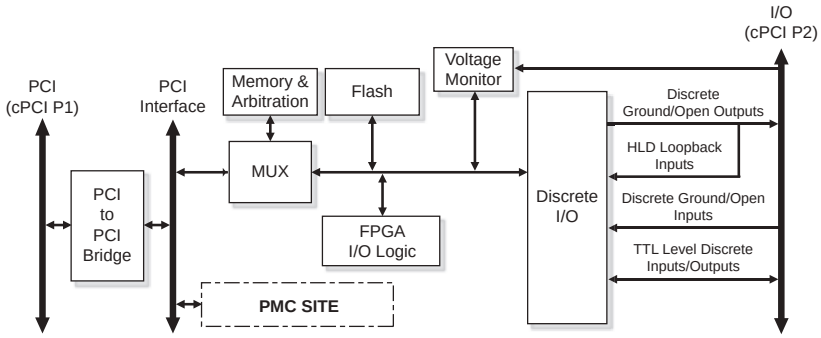
- DSP and FPGA configuration data stored in Flash memory

**DIO4-cPCI-CC** provides a highly versatile interface between the cPCI bus and DSP-Based inputs and outputs. Typical signal handling capabilities include Discrete Ground/Open outputs, High Level Discrete (HLD) Loopback inputs, and TTL level inputs and outputs. For added versatility, the card also includes a PCI Mezzanine Card Interface (PMC site). The ability to handle a wide variety of signals, perform on-the-fly signal processing, together with its conduction cooled temperature range makes the DIO4-cPCI-CC ideal for use in mission computers and other applications with harsh environmental demands.

DSP program code and FPGA configuration data can be downloaded and stored in FLASH memory via the host processor of the cPCI bus, allowing the card to combine the functionality of several individual speciality cards, saving precious backplane slots and the additional power, weight, and cooling requirements associated with those extra slots.

Signals move between the P1 connector on the PCI data bus, and external devices on the P2 connector, via a series of interfaces including a PCI-to-PCI Bridge, PCI interface, MUX, and a DSP core.

***Simplified Block Diagram of DIO4-cPCI-CC Card***




The module receives input power from the power supply via the cPCI bus. A secondary voltage of +5 V is standard, and optional voltages of +3.3 V, +12 V, and -12 V supplied either from the backplane or generated onboard, are available. Discrete output interfaces include discrete ground/open outputs and general purpose TTL digital outputs. The DIO4 also provides HLD loopback inputs and includes an ADC for BIT monitoring of power supply secondary voltages.